

REMARKS

Claims 1-61 and 76-106 are pending in the application.

Claims 1-61 and 76-106 stand rejected under 35 U.S.C. §103(a) as being unpatentable over a combination of Cui (U.S. Pat. Publication No. 2004/0000321), and Au (U.S. Pat. Publication No. 2001/0010228); or over a combination of Cui and Au in further view of Rhieu,(U.S. Pat. No. 5,364,667). The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Each of these three factors must be shown, the burden of which is upon the Examiner in order to establish a prima facie case of obviousness. Claims 1-61 and 76-106 are allowable over the cited combination of Cui, Au and Rhieu for at least the reasons that the references, individually or as combined, fail to disclose or suggest each and every element in any of those claims and fail to cite a reasonable expectation of success.

Each of independent claims 1, 24, 43, 76, 98, 99 and 105 recite depositing an elemental form of silicon-comprising material on a semiconductor substrate. The Examiner indicates reliance upon Cui as disclosing placing a substrate in a chamber for silicon deposition (present Action at page 2), and indicates at page 5 of the present Action that Cui is not limited in scope to silicon dioxide formation. Referring to the Cui

disclosure, such discloses generally “depositing a layer of material over the substrate” (paragraph 5). The only indication of any specific material is silicon oxide (paragraphs 1 and 40). The Examiner essentially argues that the specifically recited elemental silicon-comprising material is within the range of materials disclosed by Cui. However, it is noted that the Cui disclosure of “material” has a range as broad as to encompass a very large number of possible distinct composition analogous to a broadly disclosed genus (see MPEP § 2144.05(I)). In accordance with MPEP § 2144.08, one of ordinary skill in the art would have to have been motivated by the prior art reference to select the claimed material (species) (“some motivation to select the prime species or subgenus must be taught by the prior art”). Since no motivation is provided by Cui, specific or otherwise, to select the recited elemental silicon-comprising material, claims 1, 24, 43, 76, 98, 99 and 105 are not rendered obvious by Cui.

Further, the only enabling disclosure for layer formation and subsequent cleaning by Cui is for a silicon oxide material (paragraph 40). Accordingly, Cui does not disclose or enable any material other than silicon oxide. Even if the Examiner’s statements regarding Cui being not limited in scope to silicon dioxide formation were true, such is not the standard for patentability. The reference must teach or suggest what is recited in the claim. Nowhere does Cui teach or suggest elemental form silicon-comprising material specifically recited in each of the independent claims of the present application.

Neither of Au or Rhieu disclose or suggest, or contribute toward suggesting, the depositing of an elemental form silicon-comprising material over a semiconductor substrate as recited in each of the independent claims. Accordingly, as combined, the Au, Rhieu and Cui combinations fail to disclose or suggest each and every element in any of the independent claims.

In addition to the above, each of claims 1, 24, 43, 99 and 105 recites generating a plasma effective to remove at least some of a deposit or a residue from a wall within the chamber after depositing the elemental form silicon-comprising material. The Cui disclosure or removal and cleaning after silicon oxide deposition does not provide a reasonable expectation of success for the recited removal of residue after depositing an elemental form silicon-comprising material on a semiconductor substrate. Nor do the Au or Rhieu disclosures contribute toward providing such a basis for a reasonable expectation of success. Accordingly, the prima facie case of obviousness has not been established relative to claims 1, 24, 43, 99 or 105.

Regarding independent claims 76 and 98, such recite feeding a cleaning gas to remove native oxides from a semiconductor substrate prior to the recited depositing and elemental-form silicon-comprising material on the semiconductor substrate. Cui does not disclose or suggest the recited removal of native oxides prior to deposition of an elemental-form silicon-comprising material and accordingly does not provide a reasonable

expectation of achieving such removal. Neither Au nor Rhieu contribute toward providing a reasonable expectation of successfully removing native oxide prior to depositing the recited elemental-form silicon-comprising material over the semiconductive substrate. Accordingly, a prima facie case of obviousness has not been established relative to claims 76 and 98.

Since the prima facie case of obviousness has not been established relative to independent claims 1, 24, 43, 76, 98, 99 and 105, such claims are allowable over the cited art combinations. Dependent claims 2-23, 25-42, 44-61, 77-97, 100-104, and 106 are allowable for at least the reason that they depend from corresponding allowable base claims 1, 24, 43, 76, 99 and 105.

For the reasons discussed above, claims 1-61 and 76-106 are allowable. Accordingly, Applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

Dated: Sept 6, 2007

By: Jennifer J. Taylor
Jennifer J. Taylor, Ph.D.
Reg. No. 48,711